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(Ob elafostrongileze severnykh olenei)

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ELAPHOSTRONGYLOSIS OF REINDEER
(Ob elafostrongileze severnykh olenei)

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Elaphostrongylosis of the reindeer (Rangifer tarandus) causes considerable mortality of young animals in some years, and losses to deer breeding. In the Murmansk Region the infection and death rate of the animals is heaviest in winter and early spring (February-May). Deer of all age groups are known to be infected; however, 8–12-month-old calves (so called "nyaluku") suffer more severely and die. An acute and subacute form of Elaphostrongylosis is known; the infection is characterized by the following symptoms: restlessness, vertigo, dyspnea, coughing and general weakness. Death is caused by suffocation resulting from the destruction of capillaries and alveoli by Elaphostrongylus larvae due to disorders of gas exchange. The following pathological changes have been found: general venous stasis; pronounced inflation of lungs; anemia and emphysema of the lungs with punctate hemorrhages, and a great number of small parasitic nodosities.

Some 50 to 80% of the lung tissues are destroyed by migrating larvae, which tear the alveoli and capillaries. In the laceration of alveoli big and small cavities are formed, the functional activity of affected areas is disturbed and the respiration surface of the lungs is thus reduced. As the disease proceeds, the alveolar cavities are filled with exudate; the cavities are overgrown by connective tissue or become small abscesses. The larvae appear in the lungs during January–February; in March-April and even more during May, mass migration of larvae takes place through the lungs, tearing the tissues and causing partial or general emphysema. In June the total number of larvae in the lungs falls considerably. However, exudate fills the alveolar cavities, infiltrates into the lungs and forms small abscesses. In July the inflammation develops into a general abscess causing the deer's death.

Sometimes resolution of the infiltration takes place: connective tissue appears in various areas of the lungs, followed by slow recovery. The recovered animals, however, remain of poor quality and are marked for slaughter in autumn.

Monthly examinations of the feces of young animals gave the following results: till October–November (i.e., 5–6-month-old animals) the feces were free of larvae; among 7-month-old calves (December) only a few harbor isolated larvae.

In January (8-month-olds) up to 30% of the calves examined had larvae present in the feces, a few tens in a single drop of Berman's suspension. In February the number of larvae was several hundreds per drop in 65–70%

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of the calves and finally, in March–April, the whole population of 10–11-month-old calves examined was similarly infected. The feces contained a great number of larvae – a few hundred in a drop of Berman's suspension.

Larvae found in the feces during February, at an average temperature of -28° C (-5 to -43° C) survived for a long period and were not affected by the low temperatures of the northern winter; this was also true for March at an average temperature of -20°C, (-2 to -35°C). When larvae from the feces were slowly dried during 1–5 days at room temperatures, they survived; if, however, the drying period was prolonged to 15 days, the survival rate fell to 45–50% and after 30 days drying all larvae died. Structure and measurements of larvae of Elaphostrongylosis found in feces of reindeer agree with those given by V. Yu. Mitskevich (Study of the Cycle of the Nematode Elaphostrongylus rangifer in the Reindeer). Larvae taken directly from the bronchiae of an infected reindeer do not differ in size and structure from larvae found in feces; their average length is 0.288–0.36 mm and their width 0.015 to 1.017 mm; the distance between the caudal end and the anus is 0.026 mm and the width at the anal area is 0.0084 mm; the distance between the tip of the head and the esophageal dilatation 0.1–0.12 mm.

The larvae are grayish, transparent; the head tapers to a rounded tip; the tip of the tail is rounded (even when the nematode is moving) with a spine on its dorsal surface. Under conditions of cold or dryness the larvae cease to move; their bodies, commencing from the tails, become coiled. Dead larvae are stretched out and become crescent-shaped. Males and females were found in big blood vessels in the head of the animal near the cerebral hemispheres, beneath the pia mater. Large numbers of larvae found in feces do not necessarily imply the presence of adult parasites in the brain; they may be localized in other organs of the body.

Paralysis of the hind legs, a widespread disease among fully grown reindeer, occurs together with the so-called "staggers" disease of young animals; it is therefore assumed that paralysis of the hind legs is caused when the adult parasites infect the spinal cord and not the brain. The clinical picture of the paralysis clearly indicates functional deficiency in the area of the spinal cord.

So far no adult parasites were found by the author in the spinal cord; however the large numbers of larvae found in the feces of infected deer, and the absence of adult forms of the nematode in the brain stresses the need for a more thorough search for adults in the spinal cord.

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